

AMENDMENTS TO THE SPECIFICATION

On page 1, beginning at line 6, please amend the paragraph as follows:

Such a “clamping felt” is known, for example, from DE 36 12 857 and is being successfully used for many years, especially for insulation purposes between rafters in vertical roofs. For this purpose, a glass wool felt is being used, whose fibers are being obtained by internal centrifugation, according to the centrifuging basket process, bound with a binding agent quantity of approximately 6 to 7 weight % (dried, relative to the fiber mass), which is increased with respect to conventional glass wool, and the gross densities with nominal thickness of such insulating material sheets produced is between 10 and 30 kg/m³. For transportation and warehousing, the felt sheet produced is rolled up with an average compression of $\frac{1}{5}$ as a roll felt and, compressed in this fashion, it is being packed in a foil. At the construction site, the foil is cut and the roll felt, as a result of its internal tension, rolls out in the form of a plane insulating material sheet with plate-like character, in a certain nominal thickness. From this rolled out insulating material sheet, normally supported by marking lines foreseen transversally to the longitudinal direction of said insulating material sheet, it is possible to cut off plates corresponding to the local width of a rafter area, which are then being mounted into said rafter area transversally towards the production and roll up direction (“The plate from the roll”). The cutting procedure takes place with a certain excessive measure, so that during introduction into the rafter area, the plate segment is laterally compressed against the rafters, which is reinforced by the relatively high tensions then arising inside the clamping felt, in the form of clamping forces, which, by friction at the contiguous rafter area, avoid falling of said plate segment. From this clamped assembly originates the expression “clamping felt”. Optionally to the insulation material sheet there are also insulating plates made of mineral wool and being clamped between rafters available that feature marking lines, which serve here as a cutting aid for inserting the insulation material plates between the rafters.

On Page 3, beginning at line 11, please amend the paragraph as follows:

Based on the relative high gross density of conventional glass wool felt, a compression ratio above $[[1:2,5]]$ 2.5 : 1 approximately is less practicable, since in this case the mechanical properties of the product would suffer considerably. In addition, with such a compression relationship only a reduced economy of space may be obtained for warehousing and transportation, as compared to glass wool clamping felts.

On Page 4, beginning at line 10, please amended the paragraph as follows:

The invention is distinguished by an alkali/earth alkali mass relation of the mineral fibers of < 1 and a fine fiber structure of the insulating element, determined by the factors of average geometric fiber diameter $\leq 4 \mu\text{m}$, gross density in the range of 8 to 25 kg/m³ and a binding agent portion in the range of 4% to $[[5,5]]$ 5.5 weight %, referred to the fiber mass of the insulating material element. Based on the chosen alkali/earth alkali mass relation of < 1 , the fibers evidence a high temperature resistance, similar to conventional rock wool fibers. The fine fiber structure is essentially used due to the fact that fibers with an average geometric fiber diameter of $\leq 4 \mu\text{m}$ are being used. Such a fiber structure may also be attained with glass wool, however as compared to rock wool, it is considerably less temperature resistant. The range of the average geometric diameter of conventional rock wool fibers is normally above 4 to 12 μm , so that the fibers are configured in relatively coarse fashion. As a consequence of the configuration according to the invention, there results for a mineral fiber structure, with identical gross density as in the case of conventional rock wool, a far larger number of fibers in the structure and, therefore, a large number of crossing points of said fibers. Therefore, this structure may be adjusted to a lower gross density, and the gross density range, according to the invention, is from 8 to 25 kg/m³ for the desired usage of the clamping felt. Also the insulating element is distinguished by a satisfactory insulation capacity.

On Page 4, beginning at line 28, please amended the paragraph as follows:

Additionally, also the use of a preferentially organic binding agent may be reduced with the product according to the invention, as compared to glass wool, i.e. to a range of 4 weight % up to ~~[[5,5]]~~ 5.5 weight %, preferably to a range of ~~[[4,5]]~~ 4.5 weight % until 5 weight %, with which the applied fire load is being reduced, without negatively affecting the clamping behavior. Finally, as a result of the fine fiber structure and reduced fire load the insulation material element is sufficiently stiff. In the case of an insulation material sheet this is at the same time windable up to a roll without damaging the fibers. The insular mineral fiber plate, cut off from the roll, is thereby sufficiently rigid for clamped integration between beams, i.e. rafters. As a consequence of the fine fiber structure, as compared to conventional rock wool, the air portion required for the insulation effects, is raised inside the clamping felt, which results in a corresponding increase of the insulating effect. Both the insulation material sheet and the insulation material plate are homogenously formed in the range applicable for the clamping effect, meaning that they feature the same density relations via the cross section.

On Page 5, beginning at line 14, please amend the paragraph as follows:

As already initially outlined, the fibers according to the invention distinguish themselves as a result of the alkali/earth alkali mass relation of < 1 by the high temperature resistance and correspond, therefore, to the properties of conventional rock wool. Based on the finer fiber structure, however, and on the comparably lower gross density, there results for the structure according to the invention, a far more elastic behavior. Compared to conventional rock wool, the insulation material sheet, before the roll up step, does not require special treatment, ~~eventually~~ like a fulling or flexing process, so that the compression and decompression steps, required with conventional rock wool, are no longer needed. Conveniently, the mineral wool felt, during the roll up phase, is being compressed to a roll with a compression ratio of ~~[[1:3]]~~ 3:1 to ~~[[1:8]]~~ 8:1, preferably from ~~[[1:4]]~~ 4:1 to ~~[[1:6]]~~ 6:1.

On Page 7, beginning at line 11, please amend the paragraph as follows:

The mineral fibers for the insulation material of the invention may especially be produced by internal centrifugation according to the centrifuging basket procedure, with a temperature at the centrifuging basket of at least ~~[[1.100]]~~ 1,100 °C, with the obtention of fibers with a fine fiber diameter in the indicated range. Mineral wool fibers, produced with the internal centrifugation according to the centrifuging basket process, are known from EP 0 551 476, EP 0 583 792, WO 94/04468, as well as from US 6,284,684, to which reference is expressly being made with a view to additional details.

On Page 7, begin at line 23, please amend the paragraph as follows:

With a view to the temperature resistance, it is convenient, in the case, that the insulating element feature a fusion point according to DIN 4102, Part 17, of \geq ~~[[1.000]]~~ 1,000 °C.

On Page 8, please amend Table 1 as follows:

Table 1

SiO ₂	39 – 55 %	preferably	39 – 52 %
Al ₂ O ₃	16 – 27 %	preferably	16 – 26 %
CaO	6 – 20 %	preferably	8 – 18 %
MgO	1 – 5 %	preferably	1 – 4,9 <u>4.9</u> %
Na ₂ O	0 – 15 %	preferably	2 – 12 %
K ₂ O	0 – 15 %	preferably	2 – 12 %
R ₂ O (Na ₂ O + K ₂ O)	10 – 14,7 <u>14.7</u> %	preferably	10 – 13,5 <u>13.5</u> %
P ₂ O ₅	0 – 3 %	preferably	0 – 2 %
Fe ₂ O ₃ (iron total)	1,5 <u>1.5</u> – 15 %	preferably	3,2 <u>3.2</u> – 8 %
B ₂ O ₃	0 – 2 %	preferably	0 – 1 %
TiO ₂	0 – 2 %	preferably	0,4 <u>0.4</u> – 1 %
Other	0 – 2,0 <u>2.0</u> %		

On Page 8, beginning at line 3, please amend the paragraph as follows:

A preferred smaller range of SiO₂ is 39-44 %, particularly 40-43 %. A preferred smaller range for CaO is [[9,5]] 9.5-20 %, particularly 10-18 %.

On Page 8, beginning at line 5, please amend the paragraph as follows:

The composition according to the invention relies on the combination of a high Al_2O_3 -content, of between 16 and 27 %, preferably greater than 17 % and/or preferably less than 25 %, for a sum of the network-forming elements – SiO_2 and Al_2O_3 – of between 57 and 75 %, preferably greater than 60 % and/or preferably less than 72 %, with a quantity of alkali metal (sodium and potassium) oxides (R_2O) that is relatively high but limited to between 10-14,7 14.7%, preferably 10 and [[13,5]] 13.5 %, with magnesia in an amount of at least 1 %.

On Page 8, beginning at line 13, please amend the paragraph as follows:

Preferably, Al_2O_3 is present in an amount of 17-25 %, particularly 20-25 %, in particular 21-[[24,5]] 24.5 % and especially around 22-23 or 24 % by weight.

On Page 8, Line 15, please change the following:

Advantageously, good refractoriness may be obtained by adjusting the magnesia-content, especially to at least 1,5 %, in particular 2 % and preferably 2-5 % and particularly preferably \geq [[2,5]] 2.5 % or 3 %. A high magnesia-content has a positive effect which opposes the lowering of viscosity and therefore prevents the material from sintering

On Page 9, beginning at line 1, please amend the paragraph as follows:

In case Al_2O_3 is present in an amount of at least 22 % by weight, the amount of magnesia is preferably at least 1 %, advantageously around 1-4 %, preferably 1-2 % and in particular [[1,2-1,6]] 1.2-1.6 %. The content of Al_2O_3 is preferably limited to 25 % in order to preserve a sufficiently low liquidus temperature. When the content of Al_2O_3 is present in a lower amount of

for example around 17-22 %, the amount of magnesia is preferably at least 2 %, especially around 2-5 %.

On Page 9, beginning at line 28, please amend the paragraph as follows:

The insulation material sheet 1, shown in Fig. 1, consisting of mineral fibers, is partially rolled out, and the rolled out front terminal segment is designated with number 2. In the example shown, the insulation material sheet features a gross density of 13 kg/m³. The average geometric fiber diameter is of $[[3,2]]$ 3.2 μ m and the binding agent portion is around $[[4,5]]$ 4.5 weight % referred to the fiber mass of the insulating material sheet. The insulation material sheet shown is not laminated and is formed of mineral fibers, where the alkali/earth alkali relation is < 1 . Alternately, also a laminated version is possible according to EP 1223 031, to which reference is now expressly being made.

On Page 10, beginning at line 19, please amend the paragraph as follows:

In the example shown, the insulation material sheet 1 is rolled up with a compression rate of $[[1:4,5]]$ 4.5:1 to the roll. With the gross density of 13 kg/m³, the thermal conducting capacity of the insulating material section corresponds to thermal conductivity group 040.

On Page 11, please change Table 2 as follows:

Table 2

Material	conventional rock wool	conventional glass wool	insulating material section according to invention
SiO ₂	57,2 <u>57.2</u>	65	41,2 <u>41.2</u>
Al ₂ O ₃	1,7 <u>1.7</u>	1,7 <u>1.7</u>	23,7 <u>23.7</u>
Fe ₂ O ₃	4,1 <u>4.1</u>	0,4 <u>0.4</u>	5,6 <u>5.6</u>
TiO ₂	0,3 <u>0.3</u>		0,7 <u>0.7</u>
CaO	22,8 <u>22.8</u>	7,8 <u>7.8</u>	14,4 <u>14.4</u>
MgO	8,5 <u>8.5</u>	2,6 <u>2.6</u>	1,5 <u>1.5</u>
Na ₂ O	4,6 <u>4.6</u>	16,4 <u>16.4</u>	5,4 <u>5.4</u>
K ₂ O	0,8 <u>0.8</u>	0,6 <u>0.6</u>	5,2 <u>5.2</u>
B ₂ O ₃		5	
P ₂ O ₅		0,15 <u>0.15</u>	0,75 <u>0.75</u>
MnO		0,3 <u>0.3</u>	0,6 <u>0.6</u>
SrO			0,5 <u>0.5</u>
BaO			0,34 <u>0.34</u>
Total	100	99,95 <u>99.95</u>	99,89 <u>99.89</u>